



TITLE:

# On the 1.5cm Wave Length Microwave Spectroscope

AUTHOR(S):

Takahashi, Isao; Okaya, Akira; Ogawa, Toru; Hashi,  
Tsuneo

---

CITATION:

Takahashi, Isao ...[et al]. On the 1.5cm Wave Length Microwave Spectroscope. 京都大学化学研究所報告 1950, 22: 75-75

ISSUE DATE:

1950-09-30

URL:

<http://hdl.handle.net/2433/74150>

RIGHT:

Three hours after the injection we found a marked rise of the white cell count and the shift to the right of the nuclear count. The leukocytosis was assumably due to the mobilization of old leukocytes. The white cell count after twelve and twenty-four hours respectively after the injection fell toward the original value. The red blood cell count was not essentially altered through the injection. A contrast experiment with the injection of carrier phosphate solution without  $P^{32}$  to mice revealed no essential shift of the white cell count.

---

## 10. On the 1.5 cm Wave Length Microwave Spectroscope.

*Isao Takahashi, Akira Okaya, Toru Ogawa and Tsuneo Hashi.*

The description of the 1.5 cm wave length microwave spectroscope designed and constructed by us is given.

The signal oscillator consisting of klystron 2K25 sends 3 cm wave length energy, a part of which is converted to 1.5 cm energy by means of frequency converter formed by ridge type wave guide, coaxial line and silicon crystal.

The signal oscillator is frequency-modulated by saw-tooth generator which also gives sweep voltage to the oscillograph.

The frequency-modulated 1.5 cm energy is led into the absorption cell wave guide, where the existing sample amplitude-modulates the wave energy corresponding to its absorption character.

The output wave energy from the absorption cell is detected by a crystal detector, and this detected absorption wave is amplified, and applied to the oscillograph.

The low frequency amplification is practised in two ways. One way is the direct amplification using video amplifier and the other is the method in which the signal oscillator is further modified by 463 kc/sec and the absorption curve is amplified on the carrier frequency of 463 kc/sec using 463 kc/sec narrow band receiver.

A part of 3 cm wave length energy is utilized for the wave length measurement and to give the frequency marker pip on the oscillograph screen.

The pressure of the vacuum attained is as low as  $10^{-6}$  mmHg in the absorption cell, the pressure measurement being carried on with Phillips gauge.

In our design and construction, we struggled with the difficulties in getting components manufactured with meager materials and money.

We express our heartfelt thanks to Dr. O. Cary who helped us to get klystron and silicon crystal, and to others in our laboratory for their cooperation.